

NAME

U. S. GOVERNMENT PRINTING OFFICE

8-8451

DATE

4/16/41

Stange Mine Hole #1	
0 - 5	Reddish brown subangular to well rounded medium to coarse sand cont a few pebbles.
5 - 45	Brown fine dirty sand cont a few coarse sand grains.
45 - 75 Dh	Very finely sandy yellow silt.
75 - 80 Dh 2	Greenish brown silty clay.
80 - 90 Dh 1	Greenish-tan clayey silt.
90 - 100 sto	Greenish-brown compact silty clay.

Stange Mine - Hole #12	
0 - 25	Dirty brown coarse sand containing a few small pebbles. becomes a little finer in lower part.
25 - 60	Fine light-brown sand.
60 - 100	Tan very finely sandy silt. T.D.
All Dh.	

NAME

DATE

U. S. GOVERNMENT PRINTING OFFICE

3-8451

0-5	Stange Mine - Hole # ②
5-10	Red sandy clay cont. a little Mn.
10-15	Red ^{fine} medium sand. A few chips of porous tot sandstone
15-35	Similar
35-40	V. finely silty yellow silt.
35-40 40-45	Similar
40-45	Tan finely sandy silty clay. A few pieces of psilomelane
45-50	Similar with many chips of psilomelane
50-55	Similar with a little chert
55-60	Similar clay
60-65	Yellow silty clay with a little Mn
60-65 65-75	
65-75	Dark Khaki clay cont. chips of psilomelane + ss.
75-95	Khaki clay cont. chips + streaks of yellow + white clay.
95-100	Khaki clay cont. chips of laminated pink + white clay. T.D. None of samples in this hole are calcareous.

NAME

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

4/15/41

Stange Mine - Hole # (3)	
0-5	Very dark brownish-gray subangular to subrounded sand cont. considerable Mn. dark
5-10	Fine brown rounded sand cont. a little less Mn
10-15	Fine dark brown sand Grains sub-rounded
15-20	Very fine light-brown sand cont. a few balls of yellow silt.
20-25	Fine to very fine light reddish brown sand.
25-30	Pinkish-brown very finely sdy silt.
30-40	Pinkish-tan silt. cont. a few small quartz pebbles (from above?)
Db	
5+0	
40-50	Grayish-brown silty clay T.D.
Stange Mine - Hole # (14)	
0-5?	Rich coffee colored compact sandy clay - a few pebbles.
5? 30	Yellow to brown finely sandy silt.
30-40	Tan v. finely sandy silt.
Db	
5+0	
40-45	Mixture of tan and dark grayish-brown (Khaki) silty clay
45-50	Grayish brown silty clay T.D.
Drilled sandstone 48'-50'	

NAME

U. S. GOVERNMENT PRINTING OFFICE

8-8451

DATE

4/15/41

<p>0 - 20</p> <p>20 - 30</p> <p>30 - 45</p> <p>Db</p> <p>Sto (?)</p> <p>45 - 50</p> <p>Maybe upper clay</p>	<p>Stange Mine - Hole #4</p> <p>Reddish-brown subangular to well-rounded fine ^{to very fine} sand. Very Trace Mn. silty</p> <p>Light brown, very fine subrounded sand</p> <p>Yellow to tan silt v. finely silty silt.</p> <p>Yellowish brown silty clay. This may still be Becraft, but it resembles Tonoloway except in color. T.D.</p>
<p>0 - 10</p> <p>10 - 30</p> <p>30 - 35</p> <p>35 - 45 Db</p> <p>45 - 50 St</p>	<p>Stange Mine - Hole #15</p> <p>Brown fine to very fine sand - Trace of Mn. A few chips of v.f. grained light gray sandstone</p> <p>Yellowish to tan very finely sandy silt.</p> <p>Brownish-gray silty clay that looks like Tonoloway. (Mis labeled?) May be same as 45-50 in #4</p> <p>Greenish yellow finely sandy silt.</p> <p>Grayish-Brown silty clay T.D.</p>
<p>10 - 30</p> <p>30 - 35</p> <p>35 - 55</p> <p>All Db.</p>	<p>Stange Mine - Hole #19 ✓</p> <p>Subrounded Fine to very fine red sand No Mn. 1 piece of quartzite and a piece of pink and white clay noted.</p> <p>Similar sand containing a few lumps of yellow sandy silt</p> <p>Yellow to tan very finely sandy silt. T.D.</p>

NAME *Samples -*

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE *4/12/91**Stange Mine Hole #5**0-5'**Fine to very fine light reddish-brown subangular quartz sand containing a few grains of pyrolusite.**5'-10'**Same as preceding. Color is of course ~~that~~ a coating on quartz grains.**10'-15'**Khaki & light reddish brown silty clay containing a little sand. A few flakes of white Kaolin-like clay.**15'-20'**Silty clayey very fine-grained silty ~~sands~~ clay. Does not look like Becraft. Some red stain.**20'-25'**Similar, but slightly more v.f. sand.**25'-30'**Light reddish tan v.f. silty clayey silt. Yellow silt.**30'-35'**Similar - A chip of clay that is decalcified limestone**35'-40'**Same as preceding.**Pb**S + O**40'-45'**Similar but darker brown. Contains a little black & dark brown clay that effervesces slightly.**45'-50'**Brown clay*

NAME Samples W.H.M.

DATE April 12, 1941

U. S. GOVERNMENT PRINTING OFFICE

6-8451

Stange Mine Hole # (7) ✓

0-5 -
5'-10'No sample
Light reddish-brown fine to coarse
subangular earthy ^{quartz} sand No Mn.

10'-15'

Fine to coarse, sub-angular, quartz
sand, yellow to buff, some silt.

15'-20'

Buff to reddish earthy rounded to
subangular quartz sand containing
a few cubed quartz crystals.
A little Mn stain.

20'-25'

Yellowish-brown earthy sand-rounded
to subangular. Several pieces of
noncalcareous quartzite, containing
a few small pebbles up to 1/16" diam.

25'-30'

Fine to medium, yellowish-brown to
orange, ^{silty} loose quartz sand containing
a few pieces of compact tightly
cemented sandstone - prob. quartzite

30'-35'

Light brown loose subrounded fine sand
containing chips of quartzite & very
porous white fine-grained sandstone.

35'-40'

Same as preceding.

7

22

3038
95

2943

3401
40

2961

NAME *Samples - WHM.*

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE *4/12/41**Stange Mine Hole # 7 cut**40'-45'**Same as preceding. A few chips of red clayey sand like gonge filling in open cut. Easier drilling than above**45-50'**Same as preceding. A few large chips of ~~disintegrated~~ ^{conglomerated} light gray very porous sandstone, and one small ball of light brown clay.**50-55'**Friable porous subangular fine to very fine-grained ^{clean} quartz sandstone. A few pieces of quartzite. Bulk of sample consists of reddish brown silty earthy fine to very fine sand. A little Mn stain**55-60**Similar, but containing many pieces of bright red earthy fine to very fine soft sandstone.**60-65'**A combination of preceding two samples**65-70'**Yellow + buff silty clay containing white streaks. One fragment of disintegrated chert. (This may be Tonoloway L.)*

NAME Samples W.H.M.

DATE 4/12/41

U. S. GOVERNMENT PRINTING OFFICE

6-8451

Stange #7 (cont.)

- 70'-75' Finely sandy & silty yellow clay containing some white kaolin-like material. Somewhat plastic when wet. Not calcareous.
- 75'-80' Same as preceding.
- 80'-85' Silty, clayey, very fine-grained sand plastic when wet.
- 85'-90' Gray to buff very finely sandy, silty clay. One piece of psilomelane, possibly from above. Not calcareous.
- 90'-95' Like preceding.
DB
510
- 95'-100' Light olivedrab or dark khaki silty clay - a very characteristic clay residuum at top limestone. Widely scattered sd. grains.
- 100'-105' Same as preceding. Not calc.
- 105'-110' Same as preceding.
- 110'-115' Slightly greenish, grayish khaki clay containing scattered subrounded quartz grains and a few ~~fragments~~ fragments of white clay. Not calcareous. Like preceding, except that color is a little grayer.

NAME

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

4/12/41

- 11
 115-120 Stange Hole #7 (cont)
 Like preceding, but contains a few small balls of brick red clay like the gouge in large open cut. Large lumps of Khaki clay are dusted with red clay.
- 120-125 Same as preceding. One fragment of bedded clay resembles decalcified chip of Cedar Creek Fossiliferous ls.
- 125-130 Same as preceding without the red dust.
- 130-135 Same as preceding with a little red stain (Shaly ls according to Moon)
- 135-140 Slightly darker Khaki clay like preceding containing pellets & chips of dark greenish-gray clay ~~and~~ that contains small grains that effervesce. This is ~~the~~ just below the base of the zone in which weathering has removed all lime. This ^{sample} ~~zone~~ ^{from} is the transition zone between entirely weathered and fresh ls.
- 140-145 Like preceding.
- 145-150 Like preceding but contains larger ^{knots of} calcareous clay.

NAME

Samples - W.H.M.

U.S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

4/12/41

154-153

Stange # 7 (cont.)

Dark Khaki clay, containing a little red clay. Clay very calcareous & contains chips of dark greenish-gray limestone.

Total Depth.

4/15/41

Stange Mine - Hole # (16)

DB

9-20

Fine light brown subrounded sand

20-35

Very finely sandy light tan silt.

35-50

Similar, but contains clay chips of white & yellow clay.
45-50 Drilled like ss.

50'-55'

Very fine subrounded yellow sand. T.D.

Stange Mine - Hole # (13)

5-15

Reddish-brown very slightly clayey fine to very fine sand cont. a little MnO₂.

15-25

Light brown v.f. sdy silt.

25-35

Similar, but contains chips of v.f. grained buff white ss.

35-40

Very finely sdy silt - pinkish tan

40-50

Khaki or grayish-brown clay containing chips of contorted laminated clay.
Not calcareous T.D.

NAME

U. S. GOVERNMENT PRINTING OFFICE

8-8451

DATE

4/16/41

Stange Mine - Hole #9

6 - 10

Dark-brown fine to medium sand
containing a few small pebbles

10 - 15

Light brown silty very fine sand

15 - 25

Yellow v. fine sandy silt ← color change (Moon)

25 - 30

Brownish gray silty very finely sandy
clay. Looks like Tonaloway, may be same
bed as 10-15 in Hole #20.

30 - 40

Brownish-yellow silt.

40 - 45

Mostly brownish yellow silty clay, but
contains chips of brownish-gray clay
Contact is probably in this
interval.

DB

570
45 - 50

Olive drab silty clay - T. 12.

Stange Mine - Hole #8

2 - 10

Dirty coarse sand containing pebbles
of sandstone

10 - 50

Fine brown sand containing a few
pebbles of sandstone from aboveAll upper
Db.

NAME

U. S. GOVERNMENT PRINTING OFFICE

3-8451

DATE

4/15/41

0-20	Stange Mine - Hole # (10) Fine sand impregnated and in part replaced by pyrolusite. Samples are brownish black to blue-black. A few chips of soft white sandstone impregnated with Mn. A few broken quartz pebbles.
20-50 All Db.	Yellow very finely sandy silt. Some contains considerable clay binder. T.D. 35-40' clay
All Db. 0-5 5-20 20-30	Stange Mine - Hole # (21) Light brown clayey silt containing scattered sand grains + a little Mn. Light tan silt cont. scattered sd grains. Similar, but saw some quartzite chips. T.D.
0-5 5-10 10-20 20-30	Stange Mine - Hole # (24) Fine sandy loam cont. considerable Mn. Finely sandy silt cont. some Mn and clay. Buff silt. Similar silt that contains a few chips of khaki (grayish brown) clay. Contact may be in this interval.

NAME

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

4/15/41

0 - 10	Stange Mine - Hole #11 Fine brown sub-rounded sand cont. considerable Mn.
10 - 25	Brownish-yellow silt cont. a little Mn.
25 - 40	Light buff silt, containing chips of gray clay. No Mn.
40 - 45	A mixture of yellow silt, brown clay & grains of red clay. ← change
<div style="text-align: center;">Db 5' + 0</div> 45 - 50	Grayish brown clay cont. chips of yellow silt. T.D.

0 - 5	Stange Mine - Hole #1 (23) Fine to medium black sand cont. considerable Mn.
5 - 10	Brown clayey sand containing a little Mn.
10 - 35	Light brown sandy silt. A very little Mn. in upper part.
35 - 40	Very fine reddish-brown sand
40 - 55	Pinkish-tan silt.
<div style="text-align: center;">Db 5' + 0</div> 55 - 60	50' Grayish-brown clay T.D.

Moore puts Buckfat at 50' where
color change was noticeable

NAME

U. S. GOVERNMENT PRINTING OFFICE

8-8451

DATE

4/16/41

<p>5-9</p> <p>10-15</p> <p>17-25</p> <p>25-50</p> <p>upper All, Db</p>	<p>Stange Mine - Hole # 18</p> <p>Red clay containing fine to coarse angular quartz grains.</p> <p>Similar.</p> <p>Reddish-brown silty fine to coarse sand containing a few well-rounded quartz pebbles up to 1/4" long.</p> <p>Reddish-brown fine subangular sand. containing rounded pebbles of white quartz sandstone and quartzite. One fragment of ss (25-30) is 1 1/2 inches long. T.D.</p>
--	---

<p>5-10</p> <p>10-15</p> <p>15-20</p> <p>20-25</p> <p>Db</p> <p>sto</p> <p>25-50'</p>	<p>Stange Mine - Hole # 20</p> <p>Tan finely sandy silt</p> <p>Gray silty clay. Looks like Tonoloway clay but is underlain by silt.</p> <p>Tan silt containing a little Mn.</p> <p>Yellowish-brown finely sandy silt.</p> <p>Grayish-Brown silty clay Contains a few chips of purple, and white, and yellow clay. Not calcareous. T.D.</p>
---	---

NAME *Samples - W.H.M.*

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

4/14/41

<i>0-5</i>	<i>Stange Mine - Hole # (22)</i> <i>Buff sand containing some quartz gravel and a little Mn.</i>
<i>5'-10'</i>	<i>Dark buff very fine sand.</i>
<i>10'-30'</i>	<i>Dark yellow or tan very finely sandy silt.</i>
<i>30'-50'</i>	<i>Yellow to tan very finely sandy silt.</i>
<i>Db</i> <i>Strb</i> <i>50-55</i>	<i>Grayish brown very finely sandy clay. One piece of pulverulent chert</i>
<i>55-60</i>	<i>Brown silty clay containing chips of yellow silty clay</i>
<i>0-5</i>	<i>Stange Mine Hole # (27)</i> <i>Brown silty medium to fine sand</i>
<i>5'-10'</i>	<i>Similar. A few chips of the porous fine sandstone.</i>
<i>10'-15'</i>	<i>Similar Trace Mn.</i>
<i>15-20'</i>	<i>Similar with chips of sandstone. In general, more silty.</i>
<i>20-25</i>	<i>Mostly light brown silt.</i>
<i>25'-30'</i>	<i>Light brown silt. Grains are angular.</i>

NAME *Samples - W.H.M.*

U.S. GOVERNMENT PRINTING OFFICE

8-8451

DATE

4/19/41

	<i>Stange Mine Hole #29</i>
<i>0-5</i>	<i>Fine powdery silt (brown) containing some Mn.</i>
<i>5'-10'</i>	<i>Dark tan powdery silt.</i>
<i>10'-15' Db</i>	<i>Similar. Some red (burnt?)</i>
<i>15'-20' Db</i>	<i>Similar - A little clay binder.</i>
<i>20'-25'</i>	<i>Similar - contains a little v.f. sand.</i>
<i>Db 500'</i>	<i>Prof. all Db</i>
<i>25'-30'</i>	<i>Very finely sandy silty clay T.D.</i>

	<i>Stange Mine - Hole #25</i>
<i>0-15</i>	<i>Reddish-brown fine sand. A few 1/16" pebbles</i>
<i>15-25</i>	<i>Similar, but in general a little finer</i>
<i>25-50</i>	<i>Yellow ^{very} finely sandy, slightly clayey silt.</i>
<i>50'-60'</i>	<i>Similar, but contains some psilomelane.</i>
<i>60'-65'</i>	<i>Similar, but contains a few clay chips that may be Tonoloway</i>
<i>Db 5 to 65-75</i>	<i>Brown sandy clay</i>
	<i>T.D.</i>

NAME

Samples - WMM

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

4/14/41

Stange Mine Hole # (26)

0-5'

Fine khaki silty clay.

5-10'

Yellowish-Brown silt containing scattered lumps of MnO_2 and many scattered sand grains.

10-15'

Similar.

15'-20'

Fine to coarse yellow quartz sand and a little quartzite gravel in silt. No. MnO_2 .

20'-25'

Similar

25'-30'

Similar, but contains a little Mn.

Sto

30-35'

Khaki silty clay

35-40'

Similar containing chips of limestone T.D.

3 001

2 961

4 0

NAME

Samples - W.H.M.

DATE

4/12/41

U. S. GOVERNMENT PRINTING OFFICE

6-8451

0'-5'	Stange Mine - Hole #28 Dark reddish brown very finely sandy clay containing numerous grains of MnO ₂
5'-10'	Same as preceding - less sand.
10'-15'	Clay like preceding but very little sand & MnO ₂
15'-20'	Khaki-colored silty clay containing a little ^{few} limonite nodules. Plastic when wet
20'-25'	Light tan silty clay, containing a little red stain
25'-30'	Grayish tan silty clay cont. a few fine quartz grains and many specks of white clay. One piece of pyrolusite (from above?)
30'-35'	Clay Similar to above.
35'-40'	Very fine quartz sand in a matrix of clay like above (Color change)
40'-45'	Khaki silty clay containing a few chips of white & of pink tightly cemented very fine-grained sandstone or quartzite
45'-50'	Khaki silty clay containing conorted streaks of yellow & of dark greenish gray clay. A few pellets of white kaolin-like clay

NAME

Samples - LHM.

DATE

4/12/41

U. S. GOVERNMENT PRINTING OFFICE

6-8451

30'-55'	Strange # 28 Khaki silty clay, slightly darker than above. Not calc. Some red stain
55'-60'	Same as last sample. No red stain
60'-65'	Same as preceding
65'-70'	Same as preceding
70'-75'	" " "
75'-80'	Same silty Khaki noncalc. clay.
80'-85'	Khaki clay containing chips of de calcified ls + one angular pebble of limonite containing a psilomelane core. Much red stain.
85'-90'	Khaki silty clay with red stain
90'-95'	Same as preceding sample
95'-100'	Same as preceding. All these samples contain hard scattered grains that look like psilomelane - prob. from above.
100'-105'	Similar - Not calc.
105'-108'	Similar but contains small calc. streaks.
107'-108'	Washed - Made up of chips of greenish gray ls. - T.D.

NAME Samples W.M.M.

DATE

4/14/41

U. S. GOVERNMENT PRINTING OFFICE

6-8451

Stange Mine - Hole # (30)

- 0-5 Coffee-colored loamy medium sand
- 5-10 Khaki Fine sand containing many grains of MnO_2 .
- 10'-15' Similar but less MnO_2
- 15'-30 (3) All Khaki fine sand containing a little MnO_2
- 30'-35' Light tan ^{very} fine silty sand. No MnO_2
- 35'-40' Similar
- 40'-45' Similar, but contains a few fragments of the very porous fine sandstone.
- 45'-50' Similar.
- 50'-55' Similar matrix containing flakes of dark greenish brown clay

Moon thins all Becraft.

NAME *Monroe-Samples*
U. S. GOVERNMENT PRINTING OFFICE 6-8451

DATE

*4/14/41**Stange Mine Hole # (31)*

<i>0-5'</i>	<i>No sample</i>
<i>5-10'</i>	<i>Dark reddish-brown fine to medium sand</i>
<i>10-15'</i>	<i>Brick red sand containing pebbles up to 1/8" long</i>
<i>15-20'</i>	<i>Similar sand with pebbles up to 1/4 in long. Pebbles are mostly quartz.</i>
<i>20-25'</i>	<i>Light reddish-brown fine to coarse well rounded quartz sand.</i>
<i>25-30'</i>	<i>Light reddish brown Light brick red medium-sand containing a few pebbles.</i>
<i>30-35'</i>	<i>Similar - A few chips of porous medium-grained sandstone</i>
<i>35-40'</i>	<i>Light brick red medium silty sand.</i>
<i>40-45'</i>	<i>Similar</i>
<i>45-50'</i>	<i>Light brown medium sand - a few chips of clay. T.D.</i>

NAME *Samples WH19*

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

*4/14/41**Stange Mine Hole #32*

- 0-5* Brick red loose fine to medium silty sd.
- 5'-10'* Similar sand containing considerable MnO_2 grains and numerous small well rounded pebbles of quartzite,
 alter. Den
- 10'-15* Similar sand containing MnO_2 and some pink & white clay.
- 15'-20* Red clay containing grains of white & yellow clay and scattered quartz & manganese grains.
- 20'-25'* Light salmon silty clay containing many grains of white clay and chert fragments. A little medium sand.
 Den
 Db
- 25'-30* Fine to coarse sand containing a few pebbles of quartzite - a little chert from above
- 30'-35'* Fine to coarse sand and fine gravel. Many of grains are nearly spherical (may not be quartz).
 (4 hrs T.D. drill)
- 35'-40'* Similar
- 40'-45'* Somewhat more homogeneous ^{red} medium sand
- 45'-50'* Fine to medium dusty red sand.
 T. D.

NAME

U. S. GOVERNMENT PRINTING OFFICE

3-8451

DATE

4/21/41

Stange Mine - Hole # (33)

0-10

Red silty clay containing grains of pink & white chert and a little Mn.

Don
DB

10-30

Reddish brown ^{fine to} coarse sand and fine gravel containing chips of hard sandstone

30-50

Reddish brown fine sand, lighter color in lower part

Stange Mine - Hole # (34)

0-5

Tan coarse sandstone and fine pebbly conglomerate

5-30

Similar but brownish-tan; becomes redder downward in section

30-65

Fine gray sand containing a few small quartz pebbles - Trace Mn chips of fine-grained sandstone

65-78

Grayish- and yellowish tan & very finely sandy silt containing in lower part a few chips of very fine-grained sandstone

Top of yellow silt at 67' (Moon)

Poor sample from 75-78

NAME

U. S. GOVERNMENT PRINTING OFFICE

6-8451

DATE

4/21/41

Stange Mine-Hole # (35)	
0-5	Brownish-tan coarse sand & fine gravel
5-20	Fine Light-reddish-brown fine sand containing a few coarse grains
20-50	Fine Dark gray fine sand containing a little Mn. A few chips of hard sandstone
50-55	Yellow ^{very} finely sandy silt
55-64	Light cream-colored very finely sandy silt containing chips of very- fine-grained sandstone T.D.
All Db.	

NAME *Location of*
U. S. GOVERNMENT PRINTING OFFICE

Holes
3-8451

DATE

From Moon.

<i>No.</i>	<i>Alt</i>	<i>Coord</i>	<i>N</i>	<i>E</i>
✓ 1	3045		5010	4863
✓ 12	3042		4990	4864
✓ 8	3044		5107	4942
✓ 18	3041		5088	4844
✓ 7	3038		5065	4747
✓ 20	3013		5170	5234
✓ 9	3021		5162	5137
✓ 19	3045		5127	5040
✓ 13	3031		4895	5402
✓ 14	3034		4926	5495
✓ 15	3029		4952	5593
✓ 16	3029		4956	5693
✓ 3	3046		5000	5479
✓ 4	3054		5036	5571
✓ 5	3050		5050	5666
✓ 23	3026		4894	5303
✓ 24	3028		4997	5370
✓ 10	3035		5191	5337
✓ 21	3034		5212	5432
✓ 22	3059		5255	5625
✓ 11	3049		5233	5529
✓ 2	3072		5186	5692
✓ 25	3074		5201	5740
✓ 26	3005		5284	5315
✓ 27	3001		4853	5040
✓ 28	3001		4939	5044
✓ 29	2998		5007	5116
✓ 30				
✓ 31				
✓ 32				
33				